



Langport Transport Group / Somerset County
Council

RJR - NEW STATION LANGPORT- SOMERTON AREA

Appraisal Specification Report





Langport Transport Group / Somerset County Council

RYR - NEW STATION LANGPORT-SOMERTON AREA

Appraisal Specification Report

TYPE OF DOCUMENT (VERSION) CONFIDENTIAL

PROJECT NO. 70083807

DATE: DECEMBER 2021



Langport Transport Group / Somerset County Council

RYR - NEW STATION LANGPORT-SOMERTON AREA

Appraisal Specification Report

WSP

WSP House
70 Chancery Lane
London
WC2A 1AF

Phone: +44 20 7314 5000

Fax: +44 20 7314 5111

WSP.com



QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks	Draft	Final		
Date	10/01/2022	25/1/2022		
Prepared by	SH	ED		
Signature				
Checked by	ED	SH		
Signature				
Authorised by	SH	SH		
Signature				
Project number	70083807	70083807		
Report number				
File reference				

CONTENTS

1	INTRODUCTION	1
1.1	PURPOSE OF APPRAISAL SPECIFICATION REPORT	1
1.2	VISION AND OBJECTIVE OF THE SCHEME	1
1.3	CURRENT STAGE OF THE PROJECT	1
1.4	STRUCTURE OF THE ASR	2
2	SCHEME CONTEXT	3
2.1	SCHEME OPTIONS	3
3	DEMAND AND REVENUE APPROACH	6
	Trip Rate Modelling	7
	Abstraction	7
	Revenue Impacts	8
	Journey time impacts	9
	Covid-19 Adjustment	9
	Marginal External Costs	9
	Sensitivity Testing	9
4	APPRAISAL	11
	INTRODUCTION	11
	ECONOMIC APPRAISAL APPROACH	11
4.2	SCHEME COSTS	11
4.3	RISK ADJUSTMENT	12
4.4	OPTIMISM BIAS ADJUSTMENT	12
4.5	BUSINESS USERS AND TRANSPORT PROVIDERS	12
4.6	WIDER ECONOMIC IMPACTS	12

4.7	ENVIRONMENTAL IMPACTS	12
4.8	SOCIAL AND DISTRIBUTIONAL IMPACTS	13
4.9	COMMUTING AND OTHER USERS	13
4.10	RELIABILITY IMPACTS ON COMMUTERS AND OTHER USERS	13
4.11	PHYSICAL ACTIVITY	13
4.12	JOURNEY QUALITY	13
4.13	ACCIDENTS	14
4.14	SECURITY	14
4.15	ACCESS TO SERVICES	14
4.16	AFFORDABILITY	14
4.17	SEVERANCE	14
4.18	OPTION VALUES	14
5	APPRAISAL REPORTING	15

	REPORTING OF COSTS	15
	INDIRECT TAX REVENUES	15
	REPORTING OF THE APPRAISAL	15

TABLES

	Table 2-1 –Short-Listed Options	4
	Table 3-2 - Demand growth factors and elasticities included in the appraisal	6
	Table 3-3 - South Somerset and Street/Glastonbury New Housing Development Assumptions	7
	Table 3-4 - New station demand forecasting assumptions	8

FIGURES

	Figure 1-1 - Project Stages	2
--	-----------------------------	---



APPENDICES

No table of contents entries found.

1 INTRODUCTION

1.1 APPRAISAL SPECIFICATION REPORT

- 1.1.1. This Appraisal Specification Report (ASR) details the approach to carrying out the economic appraisal for the short-listed options for the RYR Langport-Somerton New Railway Station SOC.
- 1.1.2. The option refinement and appraisal process is aligned with the Department for Transport's (DfT) Transport Analysis Guidance (TAG) and Transport Appraisal Process¹. The ASR provides details of the following:
- Approach for forecasting the demand and benefits of the scheme
 - Method for assessing each of the sub-impacts of the scheme appraisal
 - Level of scheme specification that will inform the capital, maintenance and operating cost estimation
- 1.1.3. The appraisal will be undertaken based on the level of detail available and required at SOC stage.
- 1.1.4. The ASR is a live document, which will be updated at:
- SOC - to inform the appraisal to be undertaken at Outline Business Case (OBC); and
 - OBC - to inform the appraisal to be undertaken at Full Business Case (FBC)

1.2 VISION AND OBJECTIVE OF THE SCHEME

- 1.2.1. The current poor sustainable transport connectivity in the Langport-Somerton area of South Somerset. This scheme aims to contribute to the regeneration of the local economy, build social cohesion and decarbonise transport. This scheme considers solutions to the transport connectivity issue, addressing local concerns regarding increasing highway congestion, increasing air pollution, dependence on the motor car, constrained social mobility and access to education and employment. The scheme considers these issues with respect to improving the use of existing transport infrastructure.

1.3 CURRENT STAGE OF THE PROJECT

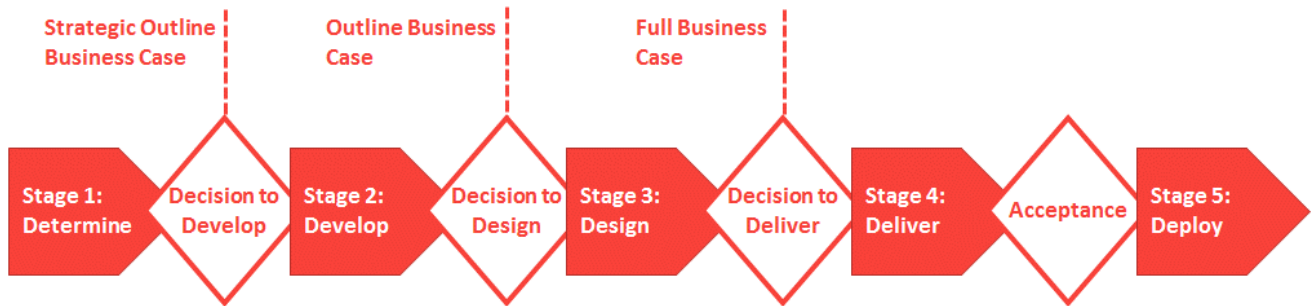
- 1.3.1. DfT identifies three investment decision points aligned with the three business case development stages, prior to the construction and operation of a scheme. The Langport-Somerton New Railway Station scheme is currently at Stage 1: Determine.
- 1.3.2. A longlist of options meeting the above scheme objectives proceeds to a sifting process which assessed the ability of each option to meet the strategic objectives of the scheme as follows:
- Need for better sustainable transport connectivity;
 - Need for sustainable economic growth;

¹ Department for Transport (January 2014) Transport Analysis Guidance: The Transport Appraisal Process

- Need to reduce carbon emissions in support of South Somerset District’s target for carbon net zero by 2030, and government policies for carbon net zero by 2050;

1.3.3. A multi-criteria framework assessment was carried out for a long-list of options. Further detail is provided in the Option Assessment Report. Options were ranked with highest scores for options which best met a broad range of stakeholder objectives to improve connectivity between Melton and Nottingham. The short-listed options were taken forward for appraisal.

Figure 1-1 - Project Stages



The proportionate modelling and appraisal method set out in this ASR will support the further appraisal of the preferred scheme options as they are developed through the project stages (illustrated above), subject to approval at each decision point.

1.4 STRUCTURE OF THE ASR

1.4.1. This ASR has been structured to align with the guidance set out by DfT and addresses:

- **Scheme context** – the study area, challenges and opportunities and the preferred scheme options to be modelled and appraised;
- **Transport modelling** – the approach to be taken to model the impacts of the preferred scheme options; and
- **Appraisal** – the approach for assessing each of the sub-impacts presented within the Appraisal Specification Summary Table (ASST) in line with DfT guidance.

1.4.2. The Appraisal Specification Summary Table is provided in Section 5 of this ASR. The table provides the level of assessment to be carried out for each of the areas of impacts as follows:

- Economy impacts
- Environmental impacts
- Social impacts
- Public accounts impacts

2 SCHEME CONTEXT

2.1 SCHEME OPTIONS

2.1.1. A Long List of options was developed and assessed using a qualitative multi-criteria framework. Table 2-1 shows the long list of options. The multi-criteria framework appraisal showed that a rail option scored highest and was then shortlisted for further assessment.

Table 2-1 - Longlist of Proposed Options

Scenario	Description (Service)	Description (Infrastructure)
Reference Case	Baseline 2019 transport network with Langport-Somerton connected to the rail network at Taunton, Castle Cary and Yeovil. Assumes the existing road network and bus services	As existing – no new stations between Taunton and Castle Cary
Rail Option	New train service operating an hourly service between Westbury and Taunton. This new train service would call at Langport/Somerton, Castle Cary, Bruton and Frome.	New station in the Langport & Somerton area and highway access arrangements
Road Option	Improvements to the Strategic and Local Road Networks to improve travel times by road and reduce congestion.	Upgrades to the SRN e.g. A303 and A358 to reduce journey times and enhanced economic connectivity. National Highways are due to submit a Development Consent Order next year to dual the A358 between A303 and M5/J25. Improvements to capacity on the A378 and A372/A37 corridor at and on the approaches to Taunton.
Bus Option	Enhancements to bus links between Langport/Somerton and Taunton, Castle Cary and Yeovil to provide links to existing rail services. These services would be aligned to connect with rail timetables. Baseline 2019 bus timetable serving Taunton, Castle Cary and Yeovil improved to offer regular hourly service on Service 54 and 77. Offer improved bus/rail interchange re-routeing buses to station entrances. Explore and implement innovative transport technology solutions (including Digital Demand Responsive Transport) to	Bus infrastructure upgrades at existing stations Additional services/vehicles to enhance frequencies

Scenario	Description (Service)	Description (Infrastructure)
	make rural transport more accessible and affordable. ²	
Active Travel & Future Mobility Option	Baseline 2019 transport network with the Langport-Somerton area connected to the rail network at Taunton, Castle Cary and Yeovil.	Provision of and enhancements to cycle links between Langport/Somerton and Taunton, Castle Cary and Yeovil. Future Mobility interventions such as e-scooters and e-bikes. Car-sharing and car-pooling schemes.

- 2.1.2. Four potential railway station sites were identified to be served by a new local stopping train service. A multi-criteria appraisal of these four station sites produced two preferred locations, Langport 2 and Somerton.
- 2.1.3. Table 2-2 below summarises the demand forecast results for the two shortlisted station sites, as well as ORR 2018/2019 demand data for existing nearby stations for comparison. The table shows that Langport Option 2 and Somerton produced the two highest demand forecasts, which was due to these options covering a larger population catchment area. It also shows that a new station at Langport or Somerton would attract a greater number of passengers than nearby existing stations such as Castle Cary, Bruton and Frome on the Reading to Taunton line; and Crewkerne, Sherborne and Templecombe on the West of England Main Line.

Table 2-2 –Short-Listed Options and Comparison with Existing Stations

New station options	Annual demand forecast
Langport Option 2	223,200
Somerton	237,200

² https://www.southsomerset.gov.uk/media/4050/action-plan-2021_22.pdf.

Nearby existing stations	ORR 2018/19 Annual demand
Castle Cary	222,500
Bruton	42,800
Frome	201,300
Crewkerne	164,300
Sherborne	210,200
Templecombe	108,200
Gillingham	378,000

2.1.4. Following the analysis undertaken in the Option Assessment Report and outlined above, an economic appraisal was carried out for the two shortlisted rail options, Langport Option 2 and Somerton.

2.2 DO-MINIMUM

2.2.1. The Economic Appraisal assumes that the rail scheme will be a package of improvements comprising a new railway station and a new train service operating on the Reading to Taunton Line. The new train service is assumed to operate an hourly service. The assumed train service would run from Taunton to Westbury via Langport-Somerton, Castle Cary, Bruton and Frome.

2.2.2. The delivery of the new train service is one option used for the assessment. There are also other train service options:

- GoOp, a community rail operator, has plans for a rail service between Taunton and Swindon operating hourly and have expressed interest in serving a new railway station in the Langport-Somerton area.
- Existing semi-fast train services could have a stop at the new railway station.

2.2.3. We have assumed a new railway station and a new train service for the Core Do Something case will be appraised. It is also possible that an existing train service could call at the station, or that a new Taunton-Westbury service could be delivered by others prior to the station opening – therefore sensitivity tests will also be appraised which assumes only a new railway station in the Do Something case.

3 DEMAND AND REVENUE APPROACH

- 3.1.1. The demand forecasting will be carried out using a trip rate model to assess the impact of the proposed new station. A comparison with a reference case will provide results for demand changes as a result of the scheme, plus the revenue impact for the rail industry.
- 3.1.2. In line with TAG guidance the revenue impact will reduce the net cost to the public finances Present Value Costs (PVC) rather than be included in the Present Value Benefits (PVB), and will be included in the Public Accounts (PA) Table.
- 3.1.3. Demand forecasting for the new station will be undertaken using WSP’s established trip rate model, which has been used on numerous new line and station studies projects in the past, adapted to the specific requirements of this project. The general framework for the forecasting of passenger demand is provided by the Passenger Demand Forecasting Handbook (PDFH), the use of which is recommended by DfT’s TAG Unit M4³. With specific regard to new stations, PDFH presents three options⁴; one of which is the use of trip rate models. Trip rate modelling is an industry-accepted approach for the forecasting of passenger demand. Trip rate models have been used extensively to inform investment decisions in new rail infrastructure since the privatisation of the rail network. A review of 27 station business cases in the 1999-2010 period found that all but four were based on trip rate model forecasts⁵. These forecasts were also reviewed ex-post and were found to be accurate in modelling future passenger demand when compared to observed station entry and exit statistics collected annually by the Office of Road and Rail.
- 3.1.4. The trip rate model will be calibrated for local travel characteristics, demand forecasts will be extracted into a spreadsheet-based economic appraisal model used for many DfT appraisals to understand the impact of general change in population and economic activity on future rail demand. Changes in demand during the scheme’s appraisal period will be forecast using a range of exogenous factors and associated elasticity assumptions, in line with the demand forecasting approach outlined in TAG Unit A5.4 Rail Appraisal. The key factors and assumptions to be used in the appraisal are presented in Table 3-1.

Table 3-1 - Demand growth factors and elasticities to be included in the appraisal

Driver	Average annual growth	Elasticity	Comment
GVA per capita growth	1.32%	1.00	To capture the impact of general economic growth on rail demand. Source: TAG Databook (July 2021) and PDFH 6.0 elasticity

³ Department for Transport (2019) - TAG Unit M4 Forecasting and Uncertainty, Section 8.

⁴ Passenger Demand Forecasting Handbook v6.0 Section B9.3 New Stations and Services.

⁵ Steer Davies Gleave (2010) -- Station Usage and Demand Forecasts for Newly Opened Railway Lines and Stations.

Fare growth	1.00%	-0.97	To estimate the demand suppressing impact of fare rises in the appraisal period. Source: TAG Databook (July 2021) and PDFH 6.0 elasticity
-------------	-------	-------	--

3.1.5. The outputs of the benefits assessment will provide the inputs for the economic appraisal for the following impacts:

- Demand
- Revenue
- Marginal external costs

3.1.6. A qualitative approach will be applied for the assessment of other impacts, as presented in the Appraisal Summary Table section.

Trip Rate Modelling

3.1.7. A trip rate model will be used to provide an estimation of the potential demand from the new station at Langport / Somerton. This is an industry recognised methodology for a high-level forecast for demand at a proposed new station.

3.1.8. The demand forecast will include demand originating from existing local housing and new demand associated with new housing and employment developments within 10km of the proposed station sites.

Abstraction

3.1.9. The nearest stations to the location of the new station are at Bridgwater, Castle Cary and Yeovil Pen Mill. It is expected that some of the new station demand will include individuals who have transferred from existing stations – this is known as abstraction.

3.1.10. The demand forecast will comprise of trips generated from existing housing and new residential developments. The South Somerset District Council Emerging Local Plan Review gives the quantum of housing developments to be built across Langport, Somerton, Martock and Ilchester over the Local Plan period as being 730 dwellings. In addition, 924 dwellings are expected to be built in Street and Glastonbury according to the Mendip Local Plan. The new housing demand from each site will be assigned to the trip rate model.

Table 3-2 - South Somerset and Street/Glastonbury New Housing Development Assumptions

Period	Total Dwellings
2021 – 2036	1,654

Key assumptions relating to the growth to be applied to the new station demand forecast over the 60-year appraisal period are presented in

3.1.11. Table 3-3.

Table 3-3 - New station demand forecasting assumptions

Demand forecasting input	Assumption
Scheme opening year	2025/2026
Steady-state demand	<p>Year 1: Steady-state demand assuming no new housing</p> <ul style="list-style-type: none"> ■ Assumes the opening of the new station but excludes the impact of additional demand generated by new housing developments in the vicinity of the station <p>Year 2-10: Growth in line with compound growth rate derived from trip rate modelling</p> <ul style="list-style-type: none"> ■ Growth rate is the compound annual growth rate (CAGR) between the following two scenarios presented in the trip rate model: <ul style="list-style-type: none"> • station demand with no additional impact from housing • station demand assuming all homes near the station are built and occupied <p>CAGR will be derived based on an 11-year growth-to-maturity period between 2025/26 and 2035/36</p>
Demand forecast	Year 11-60: Growth in line with PDFH and TAG demand forecasting principles
Journey purpose/ticket type splits	Standard TAG Databook technical inputs (July 2021 issue) Selected flow category: <i>Outside South East 25 to 100 miles</i>

Revenue Impacts

- 3.1.12. The potential operator revenue generated by the stations will be estimated based on ticket sales for all 'new to rail' trips for both the new station and existing stations, where the 'new to rail' trips for existing stations will be derived from a MOIRA analysis of adding the new train service.
- 3.1.13. Revenue estimates will not include fares revenue related to abstracted trips as it is assumed that this revenue will be offset by an equivalent loss of revenue at the other stations. Similarly, whilst there may be a slight difference in fare to travel via one of the new stations, it is assumed that any additional revenue gained from passengers making a slightly longer rail journey via the new station would be offset by a similar loss in revenue from those which eventually have a shorter journey.
- 3.1.14. Incremental revenues of the new station will be appraised based on rail demand forecasting outlined above and an average yield. This yield will be derived from MOIRA from an analysis of the average yield of all the calibration stations used for the trip rate model (excluding those which are not serviced by GWR and excluding Castle Cary, which has significantly higher yields due to long distance service patterns). The assumed fare will be adjusted for inflation in future years.
- 3.1.15. The additional revenues from existing stations will be appraised based on a MOIRA analysis of the increased demand due to the new train service and the average yield of these new trips.
- 3.1.16. Revenue forecasts will include a nominal increase in line with RPI (TAG Databook July 2021 issue). The scheme's revenue impact and the monetised journey time savings will be re-based to 2010

present value prices using GDP deflator values and discounting assumptions from TAG Databook (July 2021 issue).

Journey time impacts

- 3.1.17. The new Langport-Somerton station is expected to result in journey time savings for abstracted users and new-to-rail users as they will not have to travel as far to access the rail network. These journey time savings will not be monetised at this stage of business case development. The assessment of journey time savings will require an analysis of many possible origins and destinations for trips using the new station. Carrying out a full analysis of the demand and journey times for each origin-destination pair is not required at this stage of the business case. However, the journey time benefits for passengers at the existing stations, where the addition of a new train service would improve service frequency for several destinations, will be monetised using MOIRA.

Covid-19 Adjustment

- 3.1.18. The impact of temporary demand reduction following the onset of the Covid-19 pandemic and the resultant adjustments to long-term demand forecasts will be included in the appraisal. The scheme's economic impact and underlying assumptions (e.g. forecasted demand and revenues) to be calculated using post-Covid growth rates will be adjusted using factors derived from version 16 of the DfT's Rail demand forecasting during Covid guidance dated June 2021. The "Medium" Covid sensitivity scenario will be assumed for the core scenario for economic appraisal as per DfT's Covid-19 guidance (version 16) dated June 2021, as follows:

- Medium demand: low impact on GDP and employment, 26% reduction in commuting and business travel compared to pre-Covid figures, 25% reduction in leisure travel; *total long-run impact (as percentage of pre-Covid demand): 82% (GWR, for post-Covid GDP and employment forecast)*

Marginal External Costs

- 3.1.19. The scheme is expected to encourage a modal shift to rail and some of these travellers will have previously travelled by car and reduce the mileage necessary to travel to the closest station. Using TAG approved diversion factors, car occupancy and an average trip distance by user type, it is possible to calculate the number of car kilometres removed from the road network as a result of the scheme. The benefits of this in terms of decongestion, accidents, local air quality, greenhouse gases and indirect taxation can all be monetised using the values in the TAG Databook table A5.4.2.
- 3.1.20. The benefits will be calculated for new-to-rail users based on the average rail journey distance of all the calibration stations used for the trip rate model (excluding those which are not serviced by GWR and excluding Castle Cary, which has a much longer distance service pattern compared to other stations in the area). The benefits will be calculated for users at existing stations using the total change in passenger miles output from MOIRA.

Sensitivity Testing

- 3.1.21. Uncertainties will be addressed through sensitivity testing of key assumptions. Firstly, the scheme's robustness to a 25% reduction in average yield for new demand will be tested. This test will model a scenario where uncertainties exist around the future fare structure and the future composition of journeys (in terms of journey purpose and distances).

- 3.1.22. Further sensitivity analysis will be carried out to assess the impact of temporary demand reduction following the onset of the Covid-19 pandemic and the resultant adjustments to long-term demand forecasts. Two Covid-related sensitivity scenarios will be modelled:
- **High demand:** no impact to GDP and employment, low impact on commuting and business travel, no permanent impact on leisure travel; *total long-run impact (as percentage of pre-Covid demand): 98% (GWR, for post-Covid GDP and employment forecast)*
 - **Low demand:** substantial impact on GDP and employment, 47% reduction in commuting and business travel, 50% reduction in leisure travel; *total long-run impact (as percentage of pre-Covid demand): 67% (GWR, for post-Covid GDP and employment forecast)*
- 3.1.23. The core scenario for the Do Something represents a package of a new railway station and a new train service. Two sensitivity tests will be undertaken to assess a Do Something scheme for the new railway station only. The Do Minimum case for the first sensitivity test will include an assumed hourly railway service operating between Taunton and Westbury which could additionally call at the new railway station. The other sensitivity test will consider the possibility of the new station being served by existing semi-fast GWR services, which run approximately every two hours and travel two-way between London Paddington and either Plymouth, Paignton or Exeter St. David's. In these tests the scheme will not incur any train service operating costs, but will cause disbenefits for passengers on the 'existing' service as a result of adding a new stop and increasing the journey time. The existing semi-fast service test will also require different assumptions for the average yields and rail journey distances, given the different service pattern to the Taunton-Westbury service assumed in the other scenarios.

4 APPRAISAL

INTRODUCTION

4.1.1. The appraisal will consist of a number of economic benefits. As a result of the proposed new station and train service, additional journeys will be undertaken on the rail network, leading to additional revenue for the rail operators. In addition, it will lead to journey time savings for abstracted users, new-to-rail users, and existing station users (as the new train service will improve service frequencies at existing stations). Furthermore, a number of car journeys will be removed from the road network as some of these new rail journeys will be as a result of individuals switching from using a car for travel. This will lead to a series of marginal externality cost savings that relate to the monetised social cost that impacts the environment, the government, road traffic and health, all of which is captured in the list below:

- Congestion;
- Infrastructure (cost savings due to less road maintenance being required);
- Accidents;
- Local Air Quality;
- Greenhouse Gases; and
- Indirect Taxation (disbenefit).

ECONOMIC APPRAISAL APPROACH

4.1.2. The economic appraisal will be carried out in accordance with SOC requirements, using the following approach:

- Calculate the demand for the new station using a trip rate model;
- Use the demand results from the trip rate model to calculate 'New User' benefits, including applying an appropriate revenue figure to each journey;
- Calculate de-congestion benefits and other monetised benefits using the Marginal External Costs (MEC) method detailed in TAG Unit A5-4 for new-to-rail and abstracted trips;
- Calculate journey time and revenue benefits for users at existing stations by modelling the new train service in MOIRA;
- Apply exogenous background rail growth to revenue benefits in line with TAG Unit A5-3 guidance using forecasts obtained from the DfT;
- Develop the infrastructure costs and operating costs associated with each scenario;
- Calculate Benefit to Cost Ratio (BCR's) for each Do Something scenario and complete the Appraisal Summary Tables; and
- Perform sensitivity tests relating to assumptions surrounding post-COVID impacts and fares.

4.2 SCHEME COSTS

4.2.1. Capital costs for the new station structures and supporting infrastructure (including car parks and highway access) will be assessed and costed.

4.2.2. The annual operating and maintenance costs for the new stations in 2021 prices will be included in the scheme costs. Train service operating costs will also be used. Operating costs will be assumed to occur every year in the 60-year appraisal period from 2025 to 2084.

4.3 RISK ADJUSTMENT

4.3.1. A Quantified Risk Analysis (QRA) will not be undertaken at this stage and is proportionate to the stage of project development in line with TAG Unit A5.3 – Rail Appraisal. The risk and optimism bias adjusted cost estimate will be accounted for at this stage by applying optimism bias to the base costs (excluding QRA). However, as the scheme moves through the development stages a QRA will be completed. A high-level risk contribution of 15% will be applied to the financial costs of the scheme. This will be done to ensure the additional uncertainties of the scheme costs at this stage of the project life cycle in the Financial Case are accounted for and the affordability analysis of the scheme is robust.

4.4 OPTIMISM BIAS ADJUSTMENT

- 4.4.1. The costs will be adjusted for the economic appraisal in accordance with guidance in TAG Unit A1.2 Scheme Costs. Both capital costs and operating costs will be inflated in line with RPI.
- 4.4.2. Optimism Bias of 56% will be applied to the station construction costs, which is the value recommended in TAG for conventional rail projects. For the operating costs a 41% optimism bias allowance will be applied to reflect uncertainty at this stage of scheme development in line with DfT guidance.
- 4.4.3. Costs will be re-based to 2010 prices using GDP deflator values from Tag Data Book and discounted to 2010 using TAG discount factors. The costs will be converted from the factor cost to the market price unit of account using the indirect tax correction factor from the TAG Data Book.

4.5 BUSINESS USERS AND TRANSPORT PROVIDERS

- 4.5.1. Business users and transport provider impacts are direct transport impacts of the scheme which are monetised as follows:
- Travel time, broken into public transport travel time savings and into highway impacts resulting from reallocation of road space
 - User charges, including fares, tariffs and tolls
 - Vehicle operating costs met by the user (applicable to highway journeys only)
 - Transport operator revenues
- 4.5.2. Changes in rail users travel time (GJT) and rail revenues will be provided by MOIRA forecasts. Highway and vehicle operating cost impacts will be assessed using the Marginal External Costs (MECs) approach set out in TAG Unit A5-4 (2020). The scheme assumes no fare changes at this stage.

4.6 WIDER ECONOMIC IMPACTS

4.6.1. The standard economic benefits reported are Level 1 benefits which are appropriate for this stage of the business case. Wider economic impacts will be considered later in the business case development.

4.7 ENVIRONMENTAL IMPACTS

4.7.1. This section outlines the scope and level of assessment for the environmental TAG assessments to be completed at the SOBC stage for the scheme.

4.7.2. The environmental topics to be covered in the appraisal comprise:

- Noise;
- Air Quality;
- Greenhouse Gases;
- Landscape and Townscape;
- Historic Environment;
- Biodiversity; and
- Water Environment.

4.7.3. The noise, air quality and greenhouse gas topics will be assessed using MECs and will be quantified and monetised using the reduction in highway-kms travelled as some road users switch to rail and the application of unit values for measuring the environmental impacts.

4.7.4. The remaining environmental impacts will be assessed qualitatively as appropriate for the stage of scheme development.

The results will be documented in the Appraisal Summary Table.

4.8 SOCIAL AND DISTRIBUTIONAL IMPACTS

4.8.1. Social and distributional impacts will be assessed qualitatively as appropriate for the stage of scheme development. The results will be presented in the Appraisal Summary Table for each option.

4.9 COMMUTING AND OTHER USERS

4.9.1. The appraisal of commuting and other user benefits, and the impact of the scheme on journey time reliability will be undertaken using the same process detailed for business users and transport providers. The appropriate values of time and vehicle operating costs will be applied using the TAG Data Book for commuting and other purposes.

4.10 RELIABILITY IMPACTS ON COMMUTERS AND OTHER USERS

4.10.1. Reliability impacts for commuters and others will be assessed qualitatively given the stage of scheme development. The impact will be considered with respect to reduced waiting times reducing travel uncertainty and improving reliability.

4.11 PHYSICAL ACTIVITY

4.11.1. The appraisal of physical activity captures the health benefits of a change in the number of people travelling by active modes (i.e. cycling and walking), or a change in the distance travelled.

4.11.2. At the SOC stage there is limited understanding of the first mile / last mile contributions that scheme will provide. Consequently, a high level qualitative active travel assessment will be carried out with reference to TAG Unit A5.1 (2020)

4.12 JOURNEY QUALITY

4.12.1. Journey quality measures the real and perceived physical and social environment while travelling. This includes:

- Traveller care: Aspects such as cleanliness, level of facilities, information and the general transport environment

- Travellers' views: The view and pleasantness of the external surroundings during the journey
- Traveller stress: Frustration, fear of accidents and route uncertainty

A qualitative appraisal of the change in journey quality as a result of the introduction of additional train services will be undertaken in line with TAG Unit A4.1 (2020).

4.13 ACCIDENTS

- 4.13.1. A high-level quantification and monetisation of impacts will be undertaken using the Marginal External Costs (MECs) approach set out in TAG Unit A5-4 (2020) based on the change in highway-kilometres estimated by MOIRA.

4.14 SECURITY

- 4.14.1. The introduction of the additional rail services may affect the level of real and perceived security for transport users. In line with TAG Unit A4.1 (2020), the qualitative assessment of these impacts will reflect the changes in security between the with-scheme and without-scheme and the likely number of users affected.

4.15 ACCESS TO SERVICES

- 4.15.1. A qualitative assessment of accessibility will be undertaken. An assessment of the change in the ease of use of the system will be considered between the with-scheme and without-scheme, e.g. step-free access, provision for wheelchairs and provision of information.

4.16 AFFORDABILITY

- 4.16.1. The assessment of affordability is based on the changes in the monetary cost of travel that form part of the decision-making processes for travellers. The assessment will identify if the intervention is likely to lead to negative or positive affordability outcomes for low income groups or for vulnerable groups. In line with TAG Unit A4.2 a qualitative strategic personal affordability review will be undertaken to understand the potential changes in modal cost and affordability issues.

4.17 SEVERANCE

- 4.17.1. A qualitative assessment of severance, namely creating physical barriers to mobility will be undertaken comparing the with-scheme and without-scheme. This will consider the nature of any severance, or reduction in severance and the scale of the number of those impacted, in line with TAG Unit A4.1.

4.18 OPTION VALUES

- 4.18.1. TAG Unit A4.1 defines option value as the willingness to pay to preserve the option of using a transport service for trips not yet anticipated or currently undertaken by other modes, over and above the expected value of any such feature use. Given the early stage of the development of the scheme a qualitative assessment will be considered for the SOC.

5 APPRAISAL REPORTING

REPORTING OF COSTS

- 5.1.1. The treatment of costs in the economic appraisal and BCR calculation will be dependent on how the scheme will be funded, and ultimately whether costs are attributed to the public or private sector. In line with guidance (TAG Unit A1-2), costs (both capital expenditure and whole life costs) incurred by the private sector will be subtracted from the Present Value of Benefits (PVB). Revenue attributed to the private sector will be removed from these costs incurred. Costs to the public sector (both capital and whole life costs) are captured within the Present Value of Costs (PVC). Any revenues attributed to the public sector will be subtracted from these costs.

INDIRECT TAX REVENUES

- 5.1.2. The change in indirect tax revenues to central Government will be captured within the appraisal. For the appraisal of the options to be assessed, the change in tax revenues will consider:
- Changes in tax revenues generated through fuel and non-fuel vehicle operating costs for highway users
 - Changes in tax revenues as a result of changes in public transport fares (which are not taxed)
- 5.1.3. The changes in tax revenues as a result of highway users will be captured by the change in car-kms travelled. For public transport fares this will be quantified based on the change in transport operator revenue and using the indirect tax adjustment factor and the proportion of non-business users.
- 5.1.4. For inclusion in the appraisal the changes in indirect tax revenues will be adjusted to 2010 PV. In line with TAG Unit A1-1. Changes in tax revenues are captured within the PVB in the economic appraisal.

REPORTING OF THE APPRAISAL

- 5.1.5. The reporting of the economic appraisal and the results will be detailed in the Economic Case of the SOC. As required by DfT, the Transport Economic Efficiency, Public Accounts and Analysis of Monetised Costs and Benefits tables will be populated for the options appraised. Sensitivity testing will also be undertaken and reported.
- 5.1.6. The findings of the appraisal of each scenario will be set out in the Appraisal Summary Tables.
- 5.1.7. The ASR will remain a 'live' document and will be updated as the scheme develops, and further information becomes available. The next steps for the ASR are likely to involve:
- Reviewing the scheme description in line with developments to scheme design
 - Reviewing the assessment methodology including the approach to modelling
 - Reviewing the ASR in line with TAG updates to reconfirm the validity of the approach and specification to assessment of the scheme
- 5.1.8. Following the successful approval of the SOC, the ASR will be again be updated for OBC.



WSP House
70 Chancery Lane
London
WC2A 1AF

wsp.com

CONFIDENTIAL